

Claims:

1. A method of storing user data of a plurality of network computer entities, said method characterized by comprising the steps of:

5 writing said user data to a local data storage area (1001) in a said computer entity;

creating an emulation data which emulates a file system type in use in said network;

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incorporating said user data and said file system type data in a data file for transmission; and

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transmitting said transmission file over a communications link for remote data storage.

2. The method as claimed in claim 1, wherein said emulation data comprises data describing security attributes of said user data.

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3. The method as claimed in claim 1 or 2, wherein said step of transmitting a said transmission file comprises transmitting a plurality of modified portions of user files which have changed since a last transmission event.

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4. The method as claimed in claim 1, wherein said step of transmission occurs at predetermined intervals, and said step of writing user data comprises caching said user data in said local data storage device between file transmission events.

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5. The method as claimed in claim 1, wherein said user data is cached in a file at said local data storage area (1001) in a file system independent format; and

periodically, a portion of said file which is changed compared to a previously transmitted version of said file is transmitted over said communications link for remote data storage.

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6. The method as claimed in claim 1, wherein a said transmission file comprises a block of a user data file representing incremental changes of said user data file, and said changes of said user data file are received in compressed format, and further comprising the steps of:

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decompressing said changed block of user data;

decompressing a received full said transmission file;

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combining said decompressed changed block of user data;

decompressing said full transmission file;

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updating said full transmission file by incorporating said changed block of user data to obtain an updated data file; and

recompressing said updated data file.

7. The method as claimed in claim 1, wherein prior to said step of
25 transmitting said transmission file over said communications link, said transmission file is compressed and encrypted.

8. The method as claimed in claim 1, further comprising the step of:

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maintaining said data file for transmission in said computer entity in which said user data is written to a local data storage area;

receiving an incremental change to said user data file;

modifying said user data file by incorporation of said incremental change
5 data prior to said step of transmitting said transmission file over said
communications link for remote data storage.

9. The method as claimed in claim 1, further comprising the steps of:

10 receiving from remote data storage location:

a compressed encrypted package representing a user data file;

one or more compressed encrypted packages representing updates to said
15 user data file;;

decompressing and decrypting said received package representing a said
user data file;

20 decompressing and decrypting each said package representing an update
of said user data files;

combining said user data file with said updates of said user data file to
obtain an updated user data file, reconstituted from said data packages received
25 from said remote data storage device.

10. A method of preparing data originating from a plurality of networked
computer entities into a format suitable for remote storage, said method
characterized by comprising the steps of:

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assembling a file of user data to be remotely stored;

assembling a header data (1102), said header data comprising:

an address data (401) identifying an address of a device from which said
5 data is sent;

a file system type data (400) identifying a file system type which is used by
the device from which the data is sent;

10 an access control data (404) describing at least one category of user who is
authorised to access said user data files;

a timing data (405) identifying a time associated with said user data file; and

15 appending said header data (1103) to said user data file to create a
transmission file comprising said user data file and said header data.

11. The method as claimed in claim 10, wherein said file system type
data comprises:

20 an identifier data (1200) identifying an address of said device originating
said data;

a network settings data (1201) specifying internal network settings of said
25 computer network from which said data originates;

an emulation file system configuration data (1202), describing an internal
set-up of a gateway device sending said data, said set up data describing how
said gateway device emulates a file server system.

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12. The method as claimed in claim 10, further comprising the step of:

storing said file system type data at a remote storage device, remote from a said computer entity originating said transmission file.

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13. The method as claimed in claim 10, further comprising the steps of:

transmitting to a remote data storage facility stored configuration data including customer-specific gateway appliance settings, arranged to configure a said gateway appliance according to a specific customer requirement.

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14. A gateway appliance for sending data to and receiving data from a remote data storage location accessible over a communications link, said gateway appliance characterized by comprising:

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a data processor (1002);

a first communications port (1004) for communicating with a plurality of computers in a computer network;

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a second communications (1005) port for communicating with a remote data storage facility;

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a non-volatile data storage device (1001) for storing locally, data to be communicated via said second port;

means (1001) for emulating a file system corresponding to a file system of a network of computer entities;

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means for converting data between a file system dependent format and a file system independent format; and

means for converting said data between a compressed format and an uncompressed format.

5 15. The gateway appliance as claimed in claim 14, wherein said means (1001) for emulating a file system operates to create an emulation data which emulates a file system type of a network of computer entities, in a format suitable for incorporating with a user data file for transmission to a remote data storage device.

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16. The gateway appliance as claimed in claim 14, configured to make a scheduled transmission burst of changes to files since a last transmission burst, wherein only blocks inside files which have changed since the last transmission are transmitted in said scheduled transmission.

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17. A bulk data storage facility comprising:

a plurality of data storage devices (500, 601);

20 a plurality of file servers (501, 602) configured for storing data in said plurality of data storage devices;

a plurality of gateway devices (502, 603) providing external connectivity to said plurality of file servers and adapted to receive packets of incoming data;

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said bulk data storage facility characterized by comprising:

means (604) to allocate said plurality of incoming data packets to data storage space in said plurality of data storage devices; and

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database means (1301) for recording a data location of each said plurality of data packets in said plurality of data storage devices.

18. The bulk data storage facility as claimed in claim 17, configured to:

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receive incremental changes of pieces of user file data noting changes to at least one user data file; and

allocate locations to said incremental pieces of user files in said data
10 storage space.

19. The bulk data storage facility as claimed in claim 17, further comprises:

15 means (1302) for monitoring how much data storage space is allocated to each of a plurality of customers.

20. The bulk data storage facility as claimed in claim 17, further comprising means (1303) for calculating a monetary cost of a data storage space
20 allocated to each of a plurality of customers.

21. A method of providing data storage to a plurality of customers at a bulk data storage repository, said method characterized by comprising the steps of:

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receiving packages of data from each of said plurality of customers;

allocating (800) to each said customer at least one block of data storage space;

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allocating to each said received package a file location in said data storage space;

allocating to each said package a file name;

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storing (802, 1407) said file name in a database, said database identifying said file location in said data repository associated with said data packet.

22. The method as claimed in claim 21, further comprising the step of:

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reading a policy data (1400) from a policy database containing policy data governing allocation of data storage space to each of a said plurality of customers;

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determining (1402) if storage of said received package in a data block allocated to a said customer would exceed an allowed data storage capacity of said customer;

increasing (1405) said data block allocated to a said customer.

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23. The method as claimed in claim 21, further comprising the step of:

reading a policy data (1400) from a policy database containing policy data governing allocation of data storage space to each of a said plurality of customers;

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determining if storage of said received package in a data block allocated to a said customer would exceed an allowed data storage capacity of said customer (1403);

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if storage of said data package would exceed said predetermined data block size allocated to said customer, overwriting said received package

24. The method as claimed in claim 21, wherein said received
5 packages are received and stored by said bulk data storage facility in compressed format.